

ABSTRACT

A degree-of-randomness calculation unit calculates the degrees of randomness of data values in the respective data sets as division results, on feature amount data at feature points of the signal waveforms obtained when an image pick-up unit picks up images of marks, while changing the data division form, in the respective data division forms, and calculates the sum of the degrees of randomness. A classification calculation unit classifies the feature points in the data division form in which the sum of degrees of randomness is minimized, thereby classifying the feature amount data into signal data and noise data. A position calculation unit calculates mark position information on the basis of the position of the feature point determined as signal data by S/N discrimination with reference to such degrees of randomness. As a consequence, the position information of each mark formed on the object is accurately detected.